

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/050977

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:

- ☐ international search (Rule 12.3 and 23.1(b))
☐ publication of the international application (Rule 12.4)
☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

☐ the international application as originally filed/furnished

☒ the description:

pages 1-6 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

nos. _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* 1-8 received by this Authority on 02.05.2005 with letter of 02.05.2005

nos.* _____ received by this Authority on _____

☒ the drawings:

sheets 1/1 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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| Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | |
|---|---|-----|-----|
| 1. Statement | | | |
| Novelty (N) | Claims | 1-8 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-8 | NO |
| Industrial applicability (IA) | Claims | 1-8 | YES |
| | Claims | | NO |
| 2. Citations and explanations (Rule 70.7) | | | |
| Reference is made to the following documents: | | | |
| D1: US-A-5 839 096 (LYONS CHRISTOPHER T ET AL) 17 November 1998 (1998-11-17) | | | |
| D2: US 2002/178813 A1 (BABALA MICHAEL L) 5 December 2002 (2002-12-05) | | | |
| D3: US-A-4727549 (TULPULE ET AL.) 23 Feb. 1988 (1988-02-23) | | | |
| 1 | The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claims 1-8 does not involve an inventive step (PCT Article 33(3)). The reasons are as follows: | | |
| Novelty: | | | |
| 2.1 | Document D1 discloses: a sensor in which a sensor element and functional components enable the sensor to function and generate a sensor output signal (see D1, column 6, lines 14-26 and column 7, lines 23-48 and figure 2; the sensor element consists of a transducer device 218 and a | | |

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| | <p>detection device 222, the functional components are a circulator 236, a mixer 244, 250, 248, and an amplifier 262, 260, 258). A sensor output signal is generated and is fed to the distance measuring device 224. These functional components form a function section. Control components are also provided for the continuous control of the functional components (column 6, lines 32 and 33 and figure 1, "system diagnostic" 11 with "sub-diagnostics"; see also column 6, line 67 - column 7, line 12). Monitoring components are also provided, for monitoring the control components at least once during an operating cycle (column 7, lines 13-20 and column 18, lines 32-61, the "watchdog timer" waits for a resetting of the microprocessor 194 during a certain period, "a predetermined period of time"). The "watchdog timer" forms a watchdog circuit for monitoring the microcomputer.</p> <p>2.2 Pursuant to Chapter 5.40 of the PCT Guidelines, the feature "in particular an angular rate sensor" has no restrictive effect on the scope of protection of the claim and is therefore considered to be entirely optional.</p> <p>2.3 The subject matter of claim 1 thus differs from the arrangement known from D1 in that the monitoring section contains a component for monitoring the cycle of a microcomputer contained in the control section and an arrangement for checking the memories within the control section.</p> |

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The subject matter of the claim is thus novel.

- 2.4 Claims 2-8 are dependent on claim 1 and therefore likewise meet the PCT requirements for novelty.

Inventive step

- 3.1 In D1, a control component, more particularly the microprocessor, is monitored by the watchdog circuit. A person skilled in the art is, however, aware that all components of the control section can and must be monitored. He would also be aware that in watchdog circuits, the cycle of the microcomputer and also the correct functioning of the memory can be monitored. For an illustration of this common general knowledge in the art see D3, column 1, lines 18-30, column 3, lines 11-17 and column 7, lines 36-40. The subject matter of independent claim 1 therefore fails to involve an inventive step.
- 3.2 The subject matter of dependent claims 2 and 4 also fails to involve an inventive step, since the features of those claims are known from D1:
claim 2: column 6, lines 45-52, "minimum level of noise";
claim 4: column 6, lines 52-62.
- 3.3 D2 is considered the prior art closest to claim 3 and discloses a safety device for an angular rate sensor comprising a sensor (D2, figure 1 vibrator 100), functional elements (D2, figure 1, sensor

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switching circuit 200) and control components which control the functional components (D2, paragraphs [0030] and [0033], the diagnostic switching circuit 600 contains the sensor control switching circuit 610, which controls the sensor output signal and compares it with threshold reference voltages, i.e. limiting values. When a malfunction occurs, the switching circuit emits a diagnostic signal at the output of the switching circuit 650; see also figure 2). The difference between the subject matter of D2 and claim 3 is the presence of the monitoring components, which monitor the control components. The problem which this feature attempts to solve is that with the diagnostic arrangement from D2, in the absence of a signal indicating a malfunction at the output of the switching circuit 650 or even when a signal is generated indicating that there is no malfunction, it is still not entirely certain that all components are functioning correctly, since the diagnostic arrangement itself could be defective.

Document D2 is concerned with the field of automotive engineering. Vehicle behaviour is explicitly mentioned (see paragraphs [0012] and [0050]).

A person skilled in the art would therefore seek a solution to the above-mentioned problem in the field of vehicle sensors. D1 mentions the same problem and indicates the same solution as claim 3, namely the monitoring components

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(watchdog): monitoring the cycle and the memory is a common procedure to a person skilled in the art; see point 3.1 above.

A person skilled in the art would apply the feature from D1 to the arrangement from D2 without thereby being inventive and would thus arrive at the subject matter of claim 3. The subject matter of that claim therefore fails to involve an inventive step.

- 3.4 The remaining claims, claims 5-8, also appear to be non-inventive: although D1 and D2 both describe functional sections with exclusively analogue components, the use of digital components in such switching circuits, and therefore also the controlling of such components, is an obvious measure (claims 5-7). The non-multiple use of gate circuits of an ASIC for safety reasons would appear to be obvious to a person skilled in the art (claim 8).